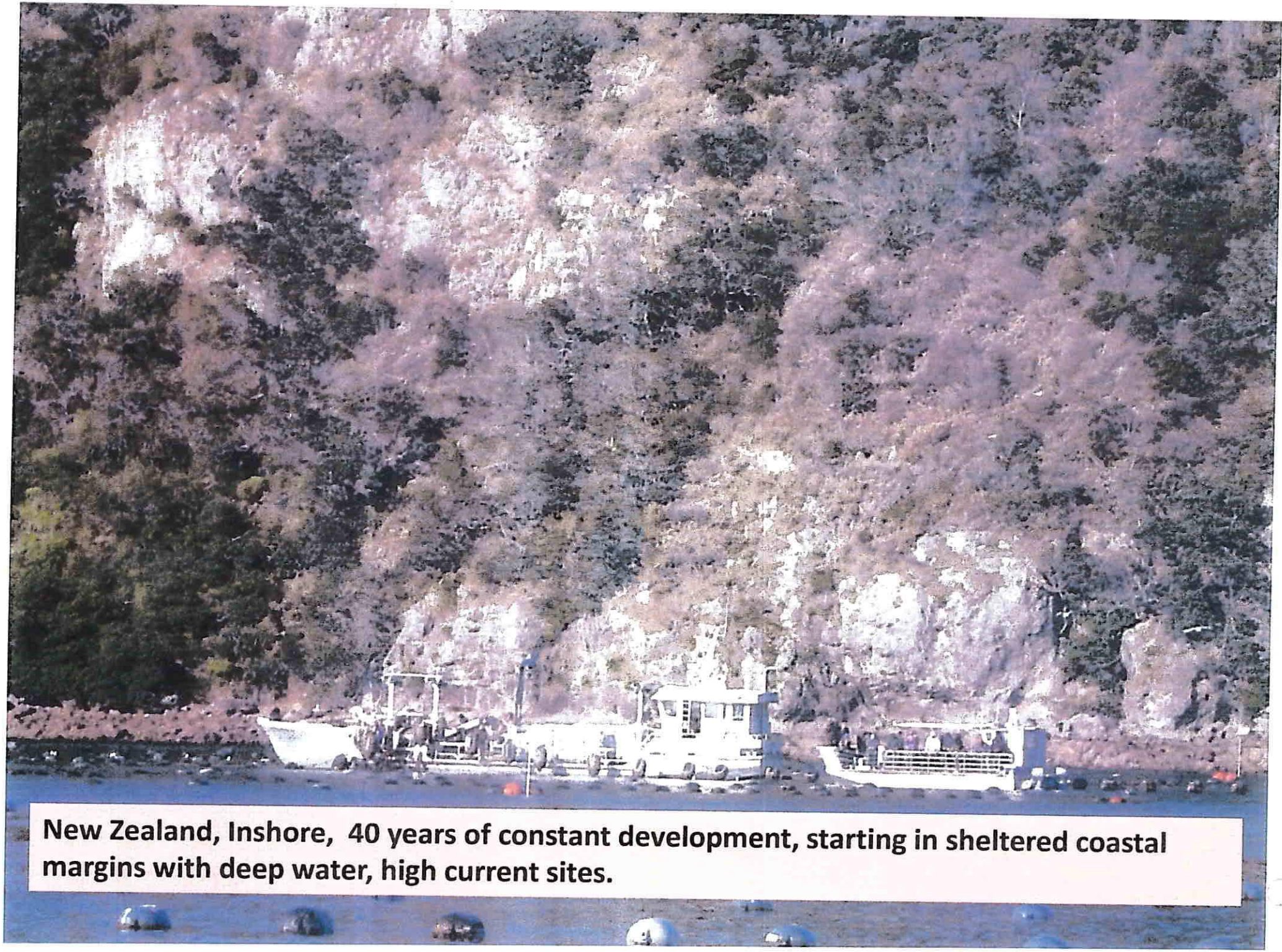
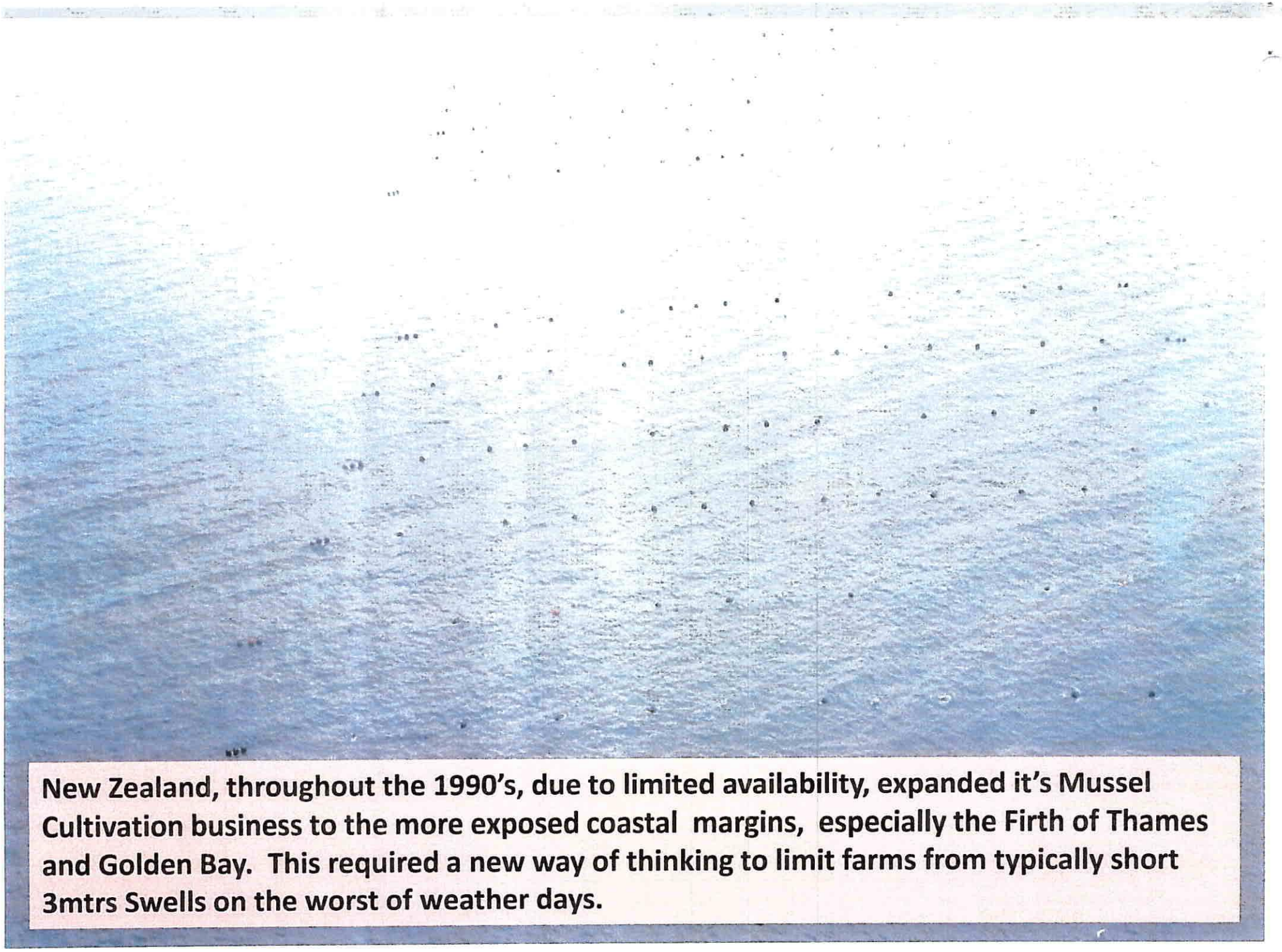
Quality Equipment Limited
New Zealand Rope and Twine.

QE Mussel Farming,
- Moving Offshore.

Presented by Joe Franklin Jnr.

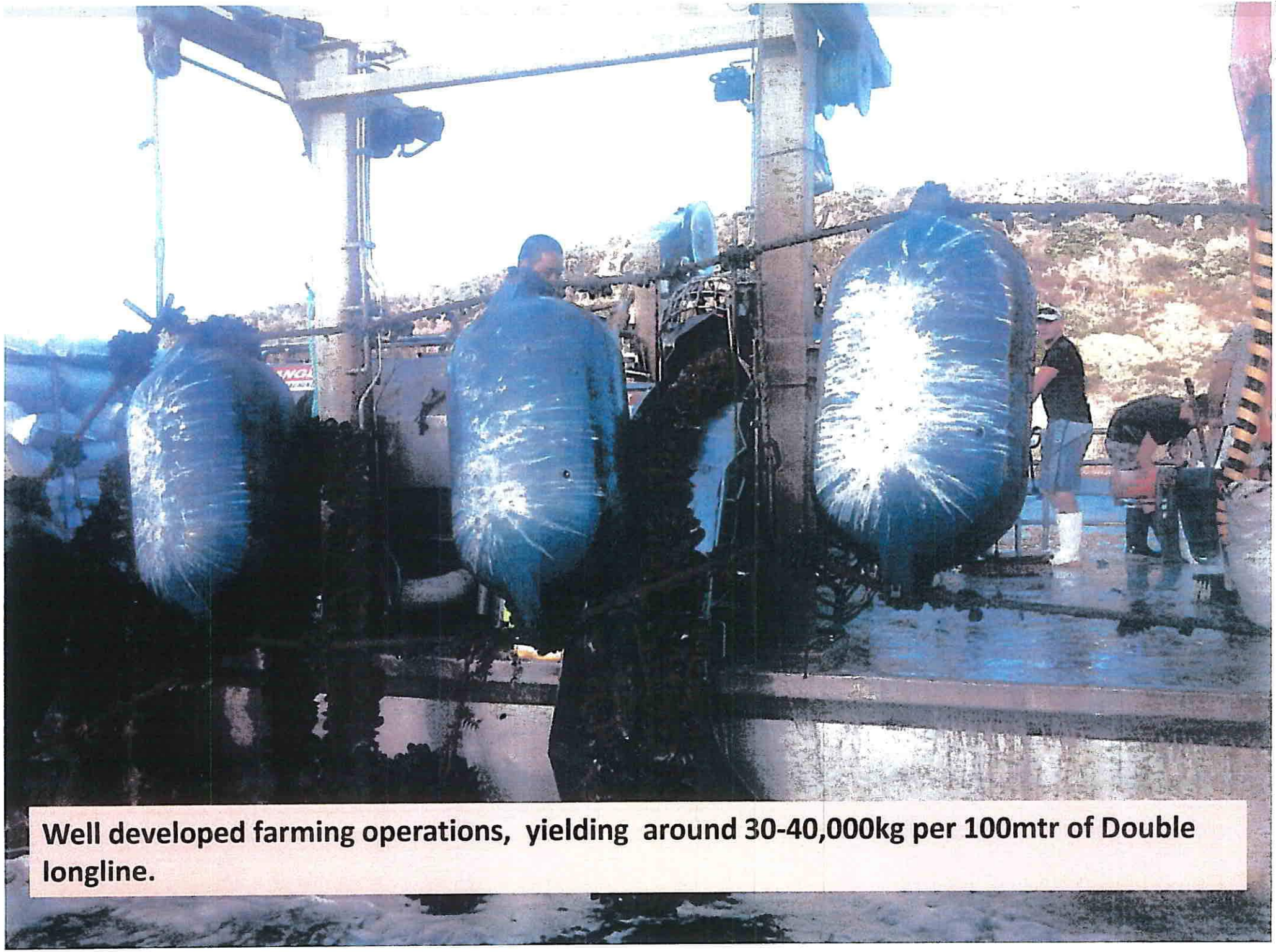


New Zealand, Inshore, 40 years of constant development, starting in sheltered coastal margins with deep water, high current sites.



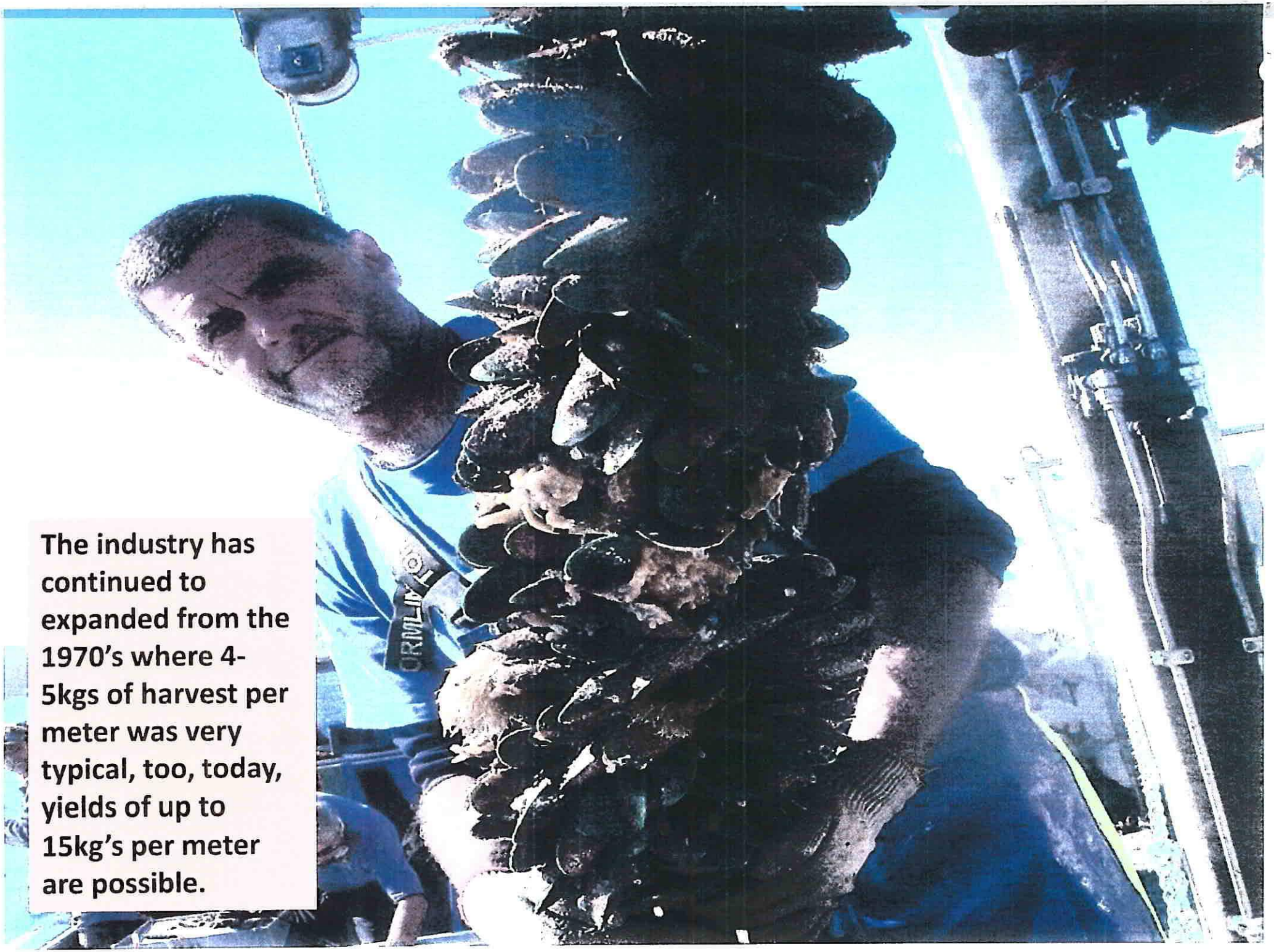
New Zealand, throughout the 1990's, due to limited availability, expanded it's Mussel Cultivation business to the more exposed coastal margins, especially the Firth of Thames and Golden Bay. This required a new way of thinking to limit farms from typically short 3mtrs Swells on the worst of weather days.

Technology, Ropes and Vessels at the same time continued to develop allowing us to develop the most mechanised systems in the world for continuous suspended culture systems.



Well developed farming operations, yielding around 30-40,000kg per 100mtr of Double longline.


For New Zealand, this continuous catching and then harvest model allowed for typical rates of harvest to be set between 8,000 to 15,000kg/hr. This included cleaning, grading and packed on board.



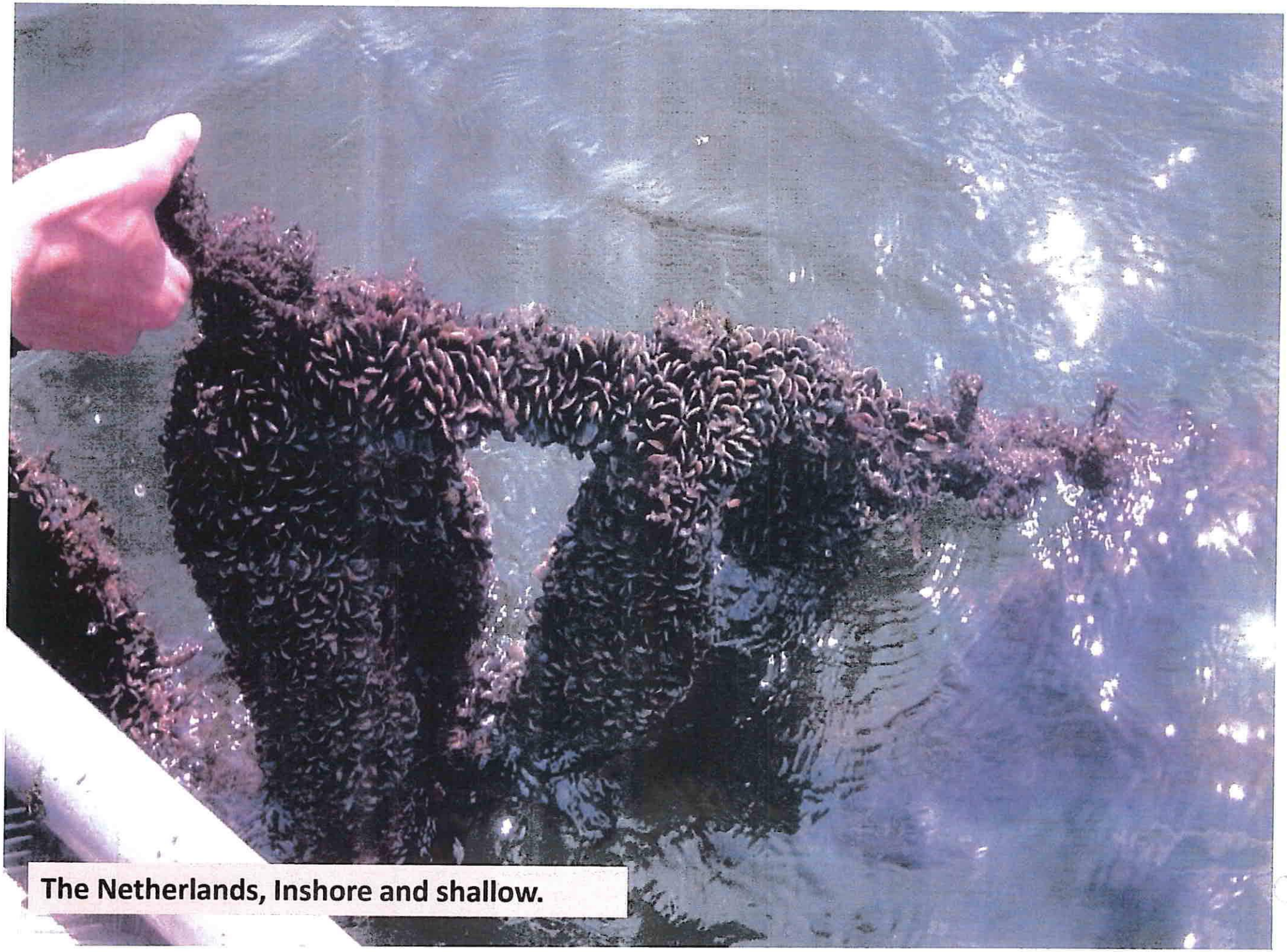
The industry has continued to expanded from the 1970's where 4-5kgs of harvest per meter was very typical, too, today, yields of up to 15kg's per meter are possible.

Many in the world have seen what we have developed, adapting there own farming practices along same lines and principles of the New Zealand model. The worlds largest farm now operating in Chile. producing approximately 40,000 metric tones.

South Korea, Inshore.

Wales , Inshore.

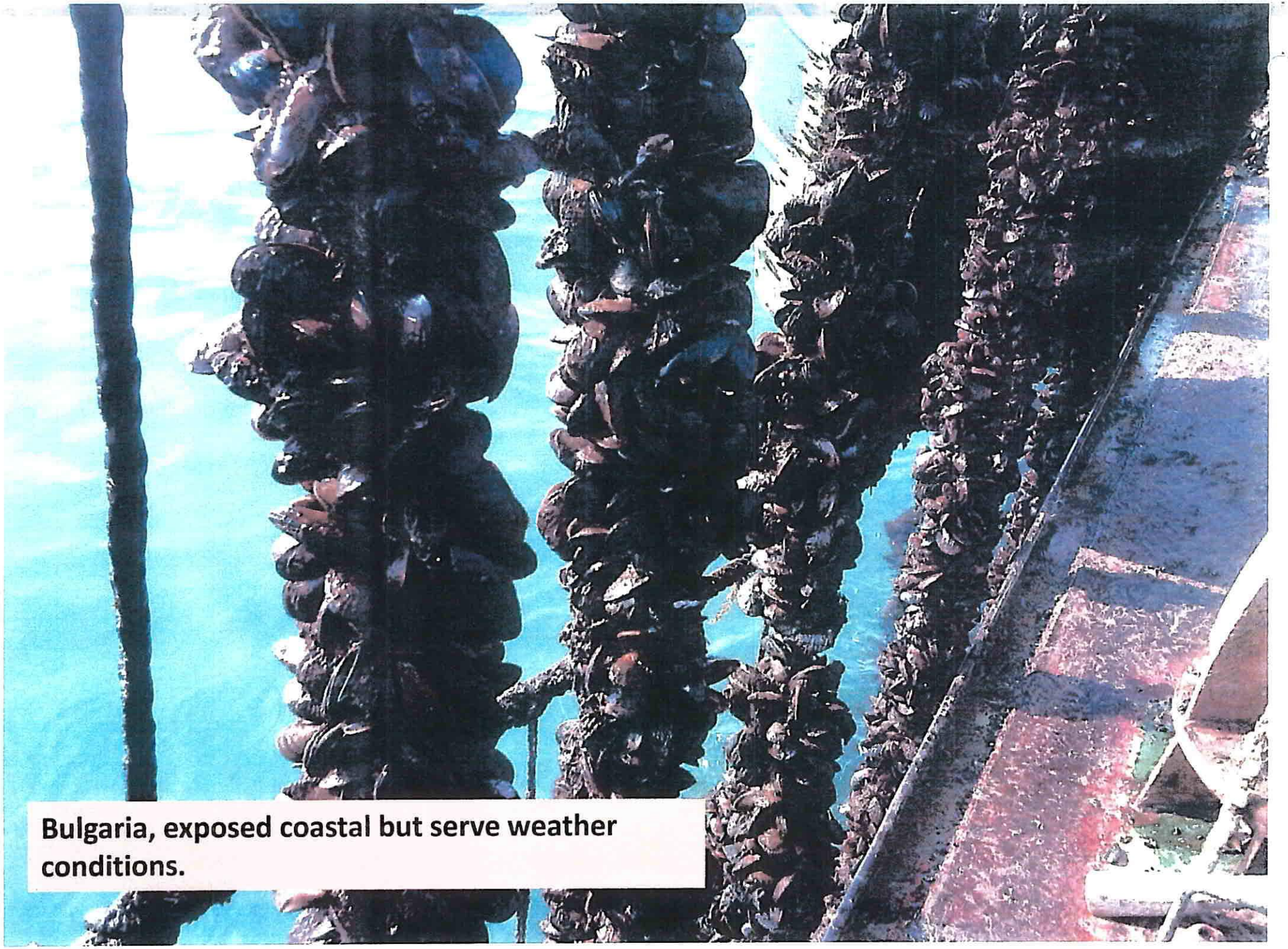
Scotland, Inshore



The Netherlands, Inshore and shallow.

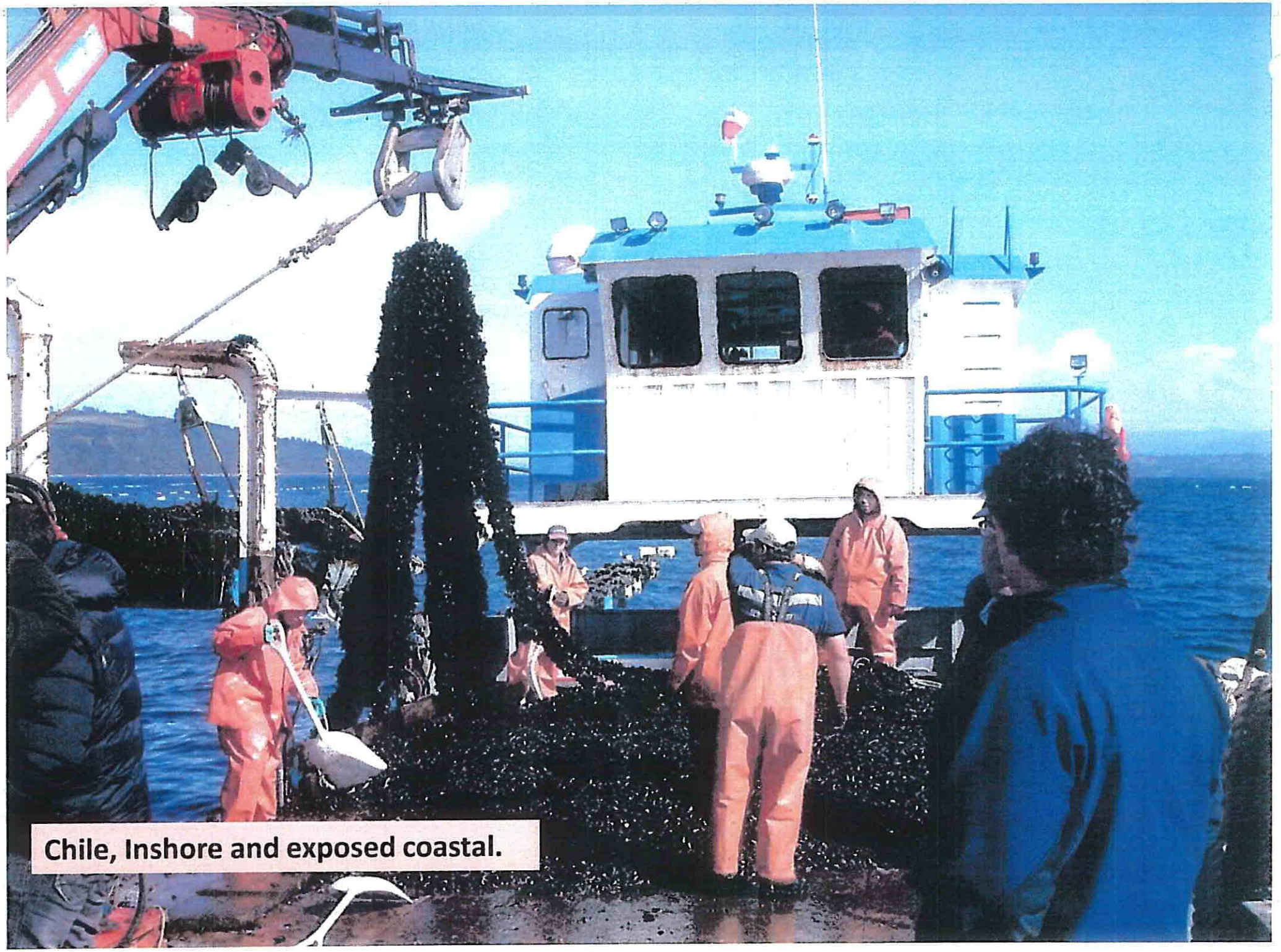
Hebrides and Shetlands, Inshore but serve weather conditions.

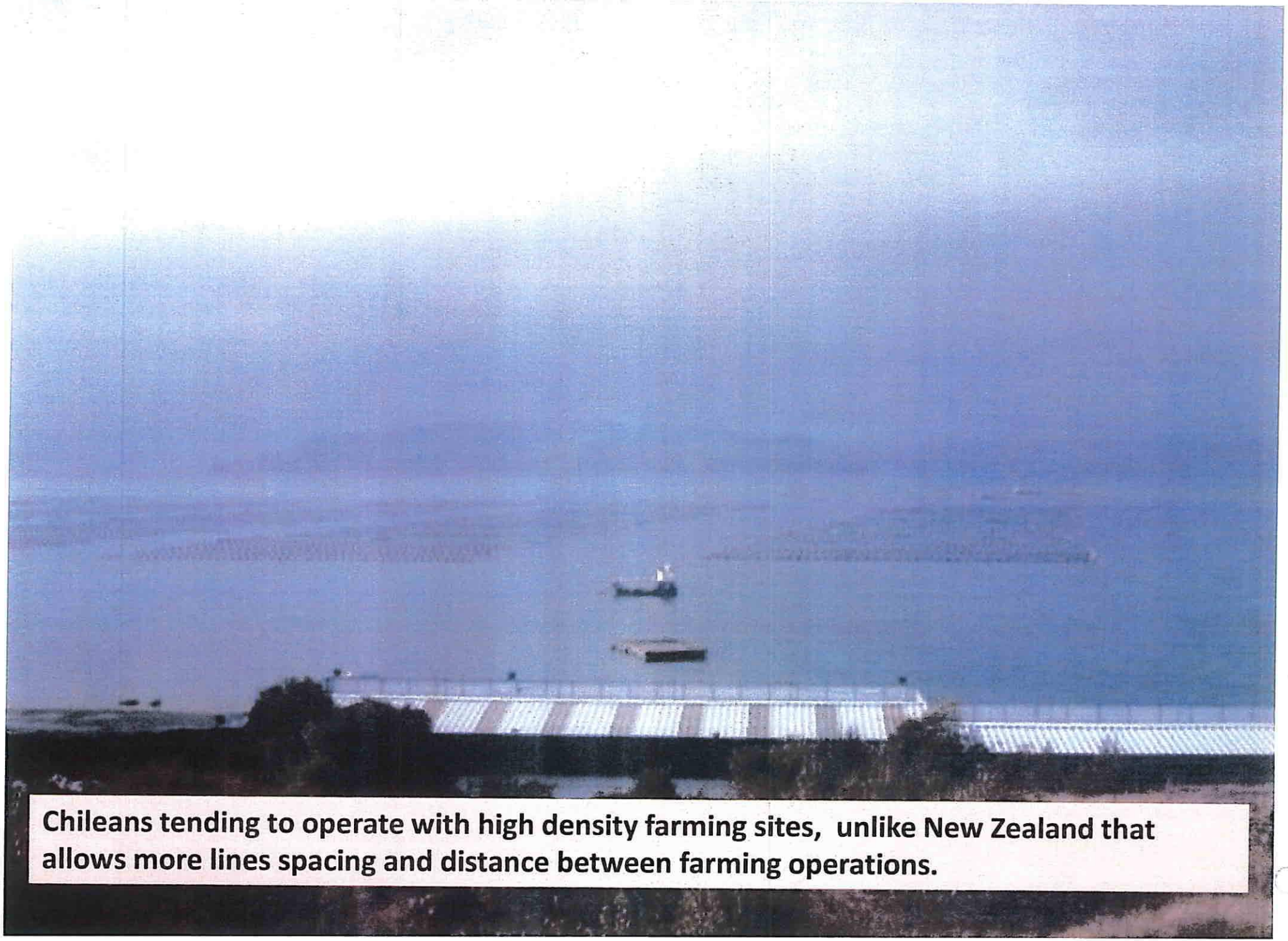
Turkey, exposed coastal.



Bulgaria, exposed coastal but serve weather conditions.

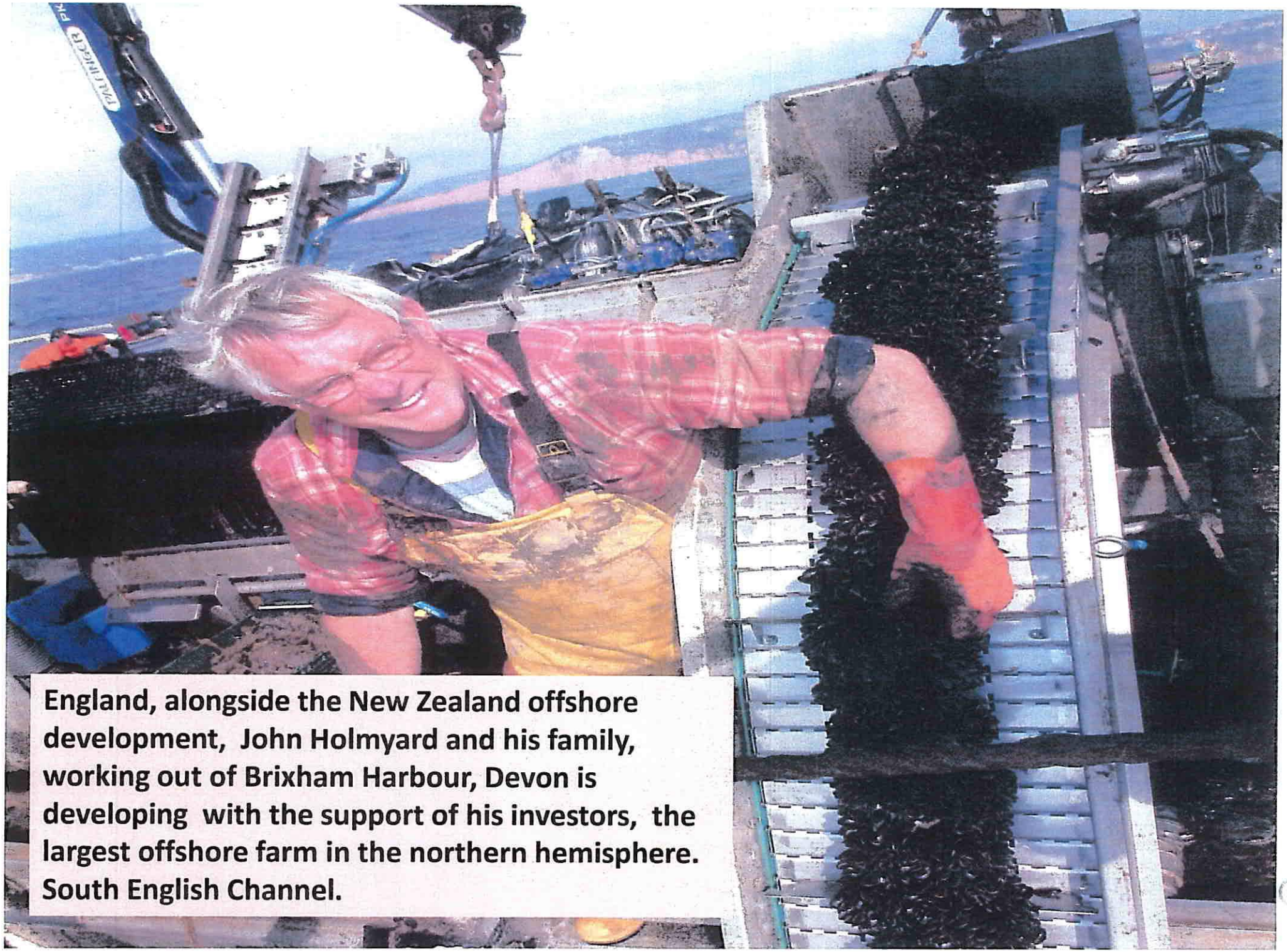
Thailand, Exposed Coastal


Chile, Inshore and exposed coastal.



Chileans tending to operate with high density farming sites, unlike New Zealand that allows more lines spacing and distance between farming operations.

Belgium, The desire to locally grow Mussels in Europe, has seen new developments and line structures now move into the Offshore waters in the Belgium Channel.



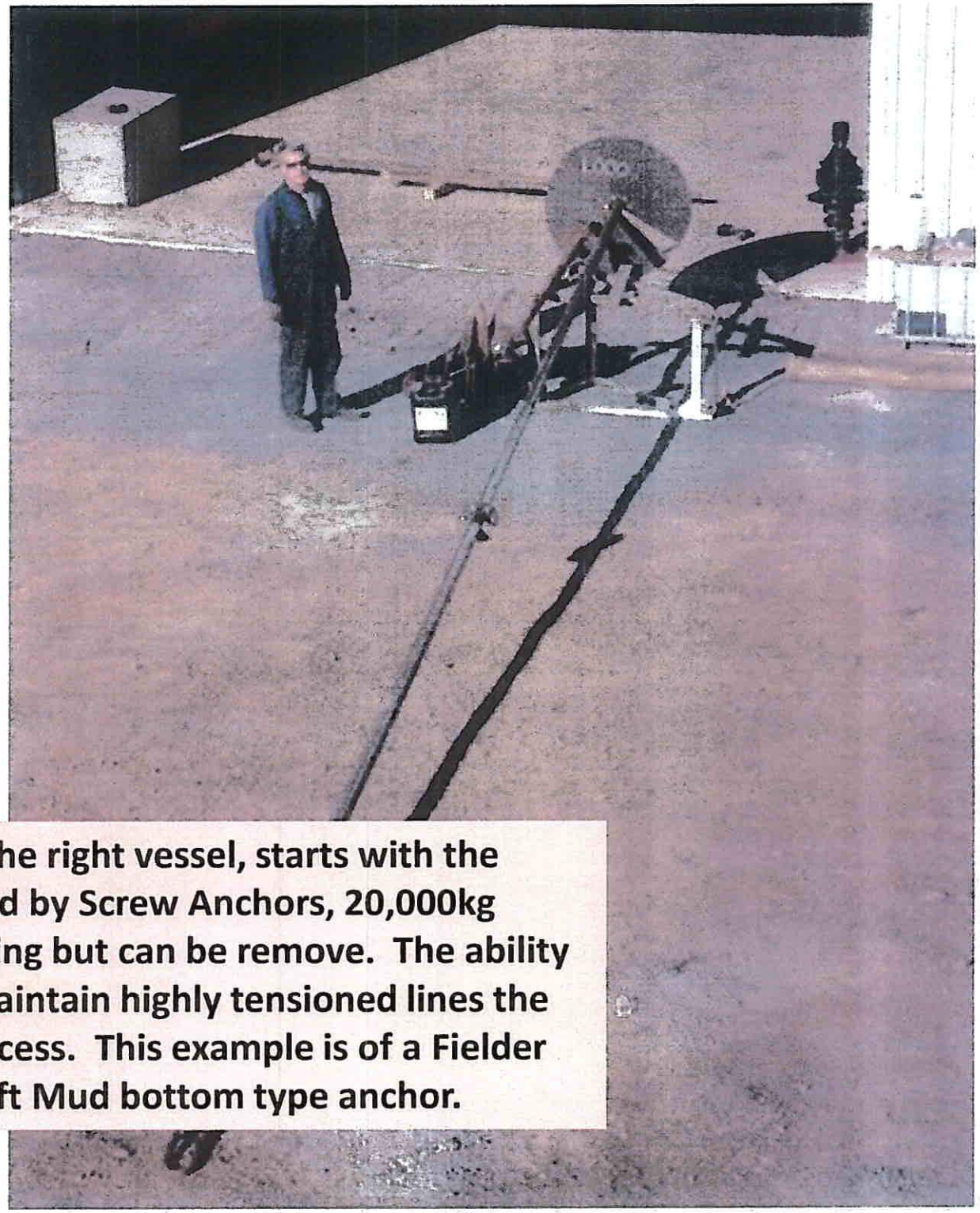
England, alongside the New Zealand offshore development, John Holmyard and his family, working out of Brixham Harbour, Devon is developing with the support of his investors, the largest offshore farm in the northern hemisphere. South English Channel.


True Offshore, New Zealand,
Whakatohea, Opotiki, Our
largest private site, 3800ha.

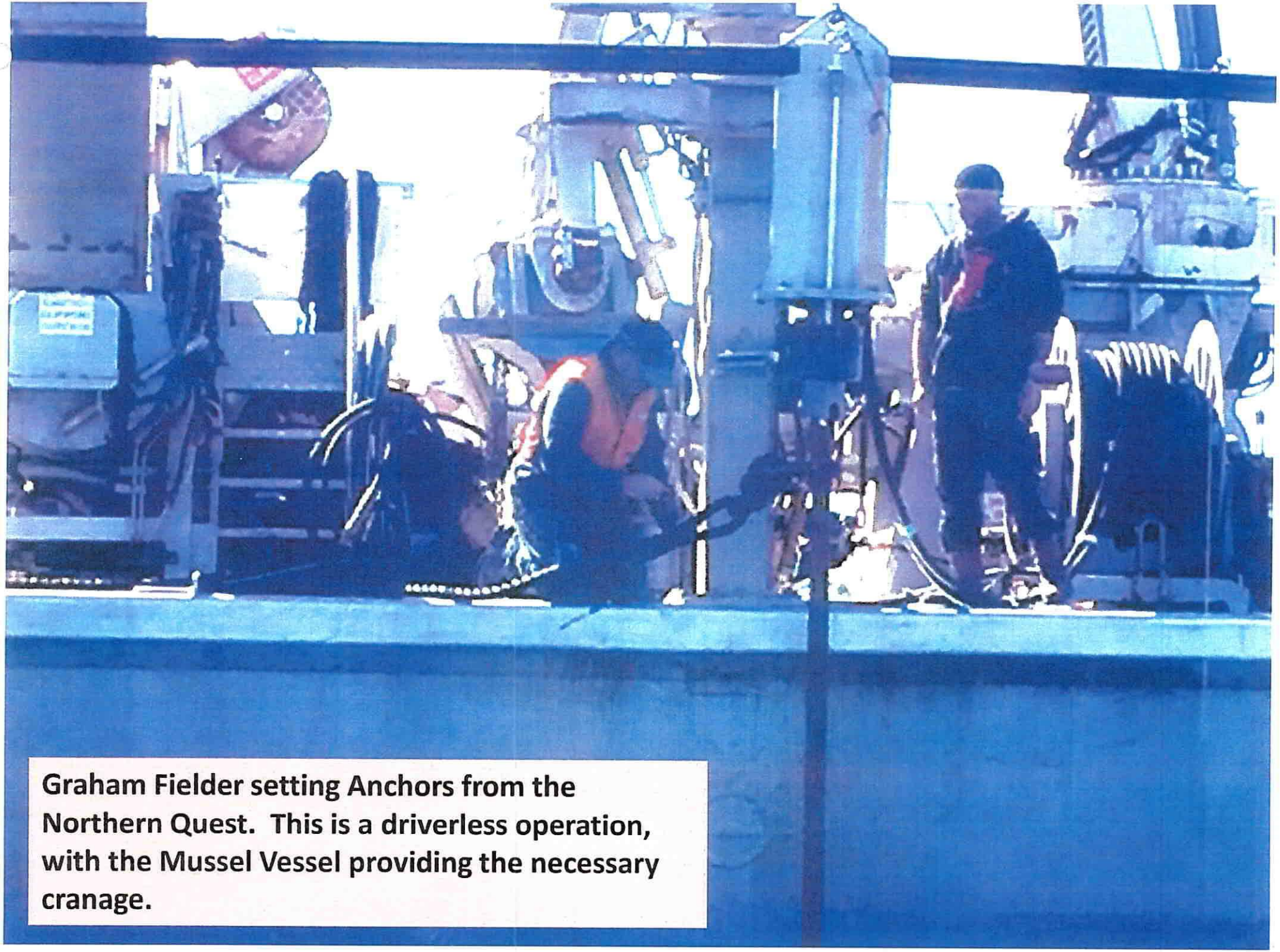
New Zealand, Offshore location.

NZ Offshore,10km from the shore, subjected to Cyclone generating open sea swells of up to 12mtrs recorded. Water depth 45mtr

1st vessel purchased for offshore, the 30mtr "Northern Quest". Owned by Whakatohea. 2nd vessel currently under construction.

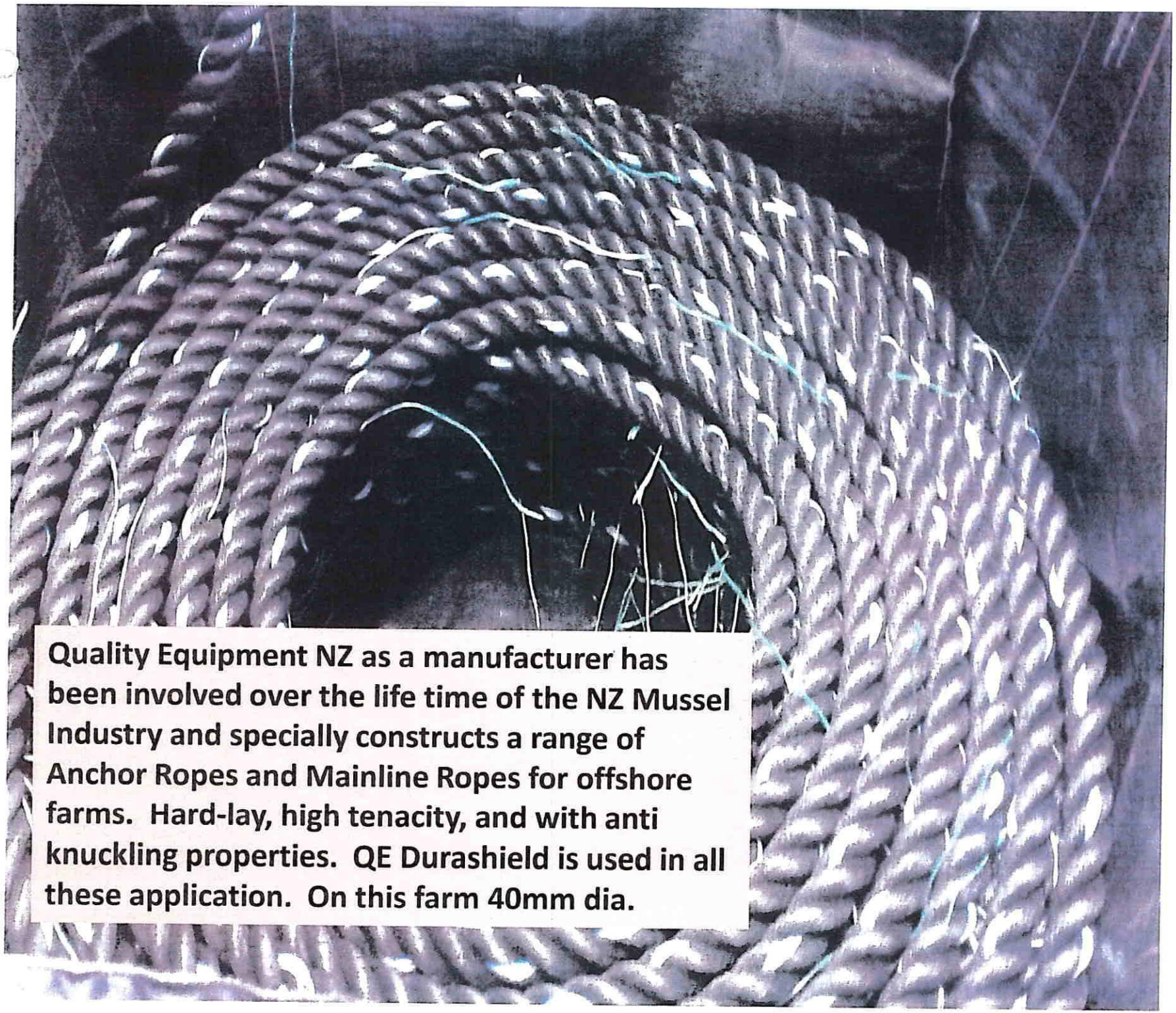


Success after the right vessel, starts with the security offered by Screw Anchors, 20,000kg expected holding but can be remove. The ability it make and maintain highly tensioned lines the formula to success. This example is of a Fielder Marine Ltd, soft Mud bottom type anchor.



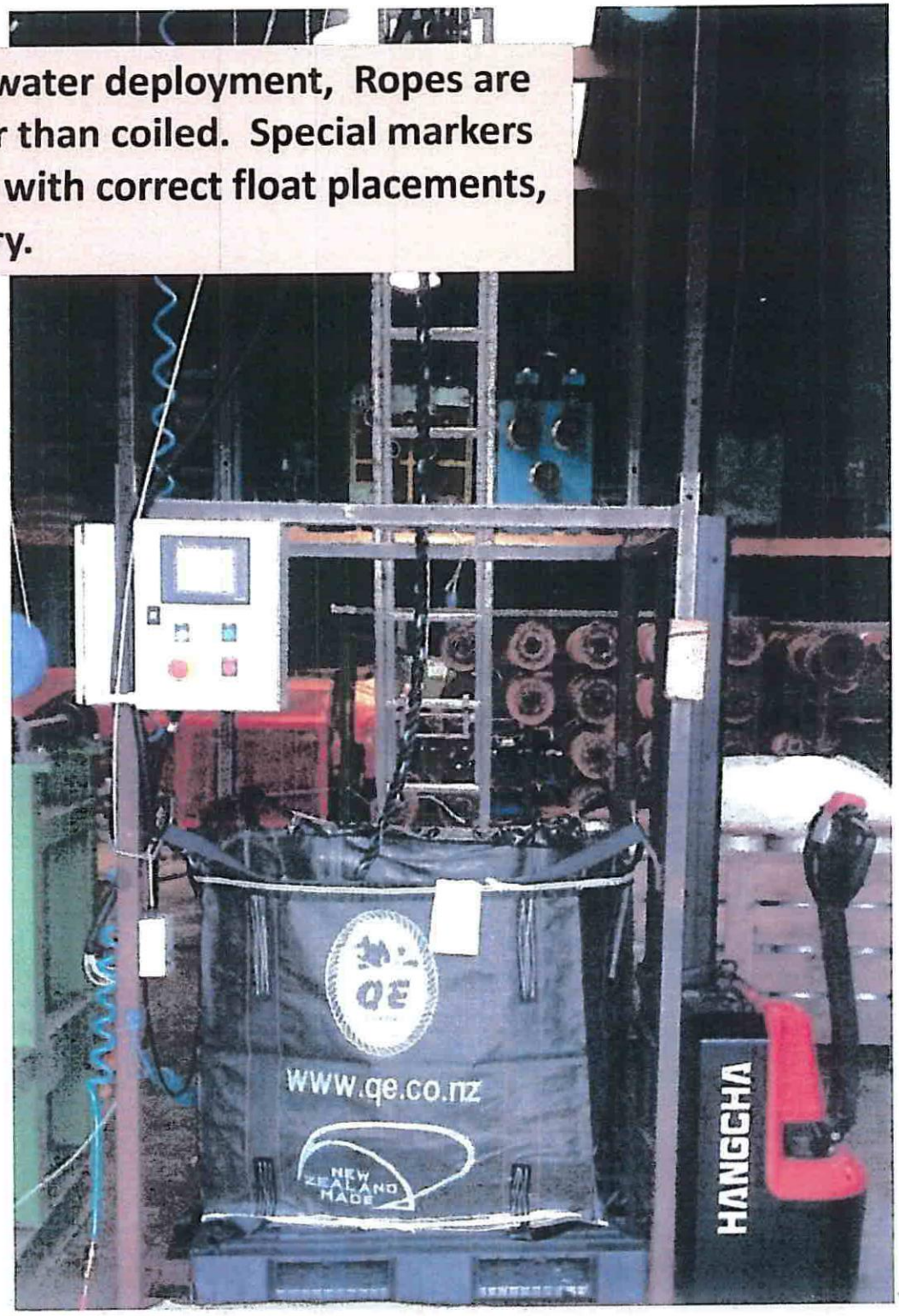
Graham Fielder setting Anchors from the Northern Quest. This is a driverless operation, with the Mussel Vessel providing the necessary cranage.

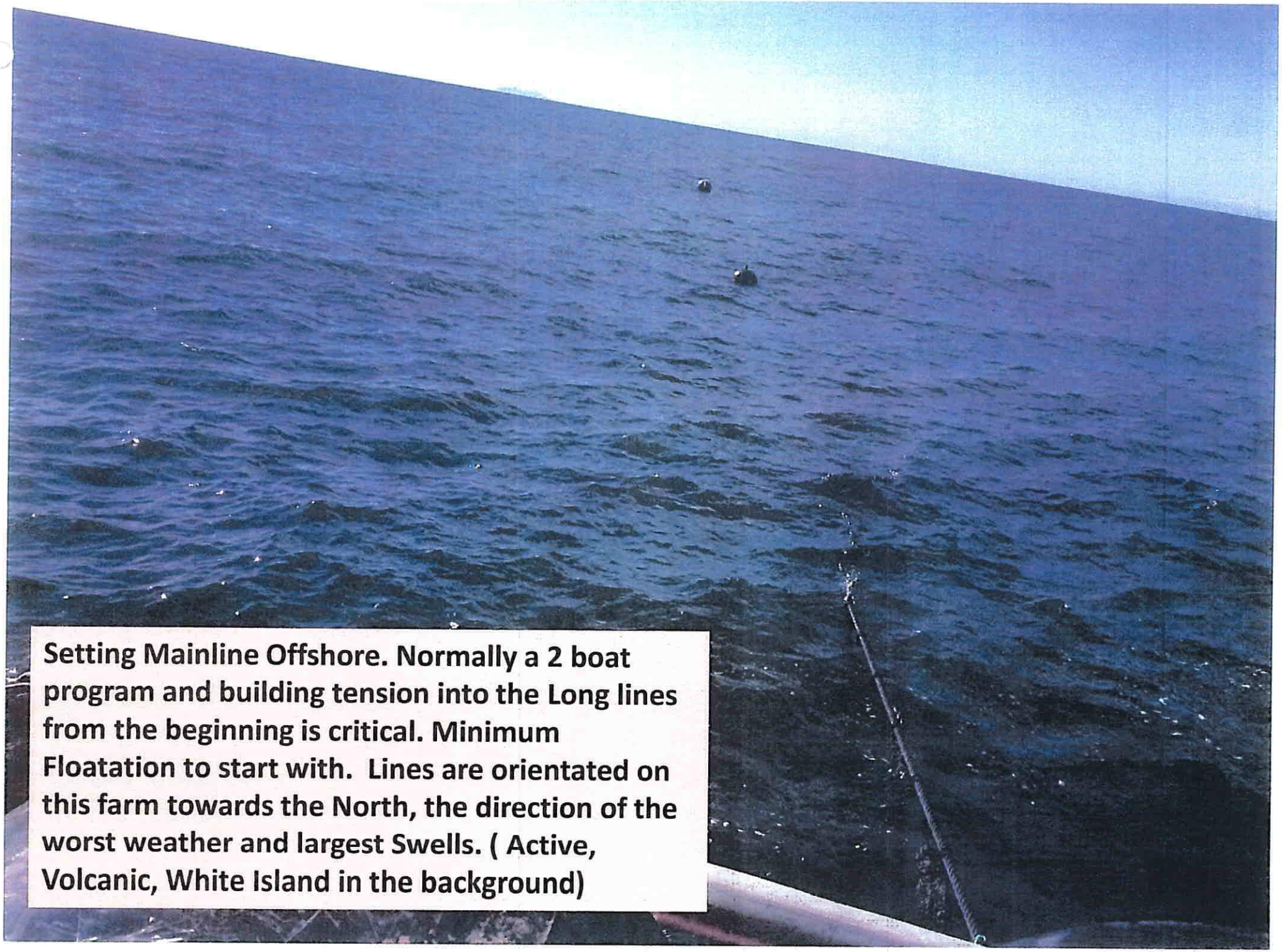
The anchor drill rig is lowered to the sea floor. The Drill is engaged and the Anchor pulls itself into the seabed. The Anchor Shaft length and size of Plates determine the holding power. This farm has a water depth is 45mtr.



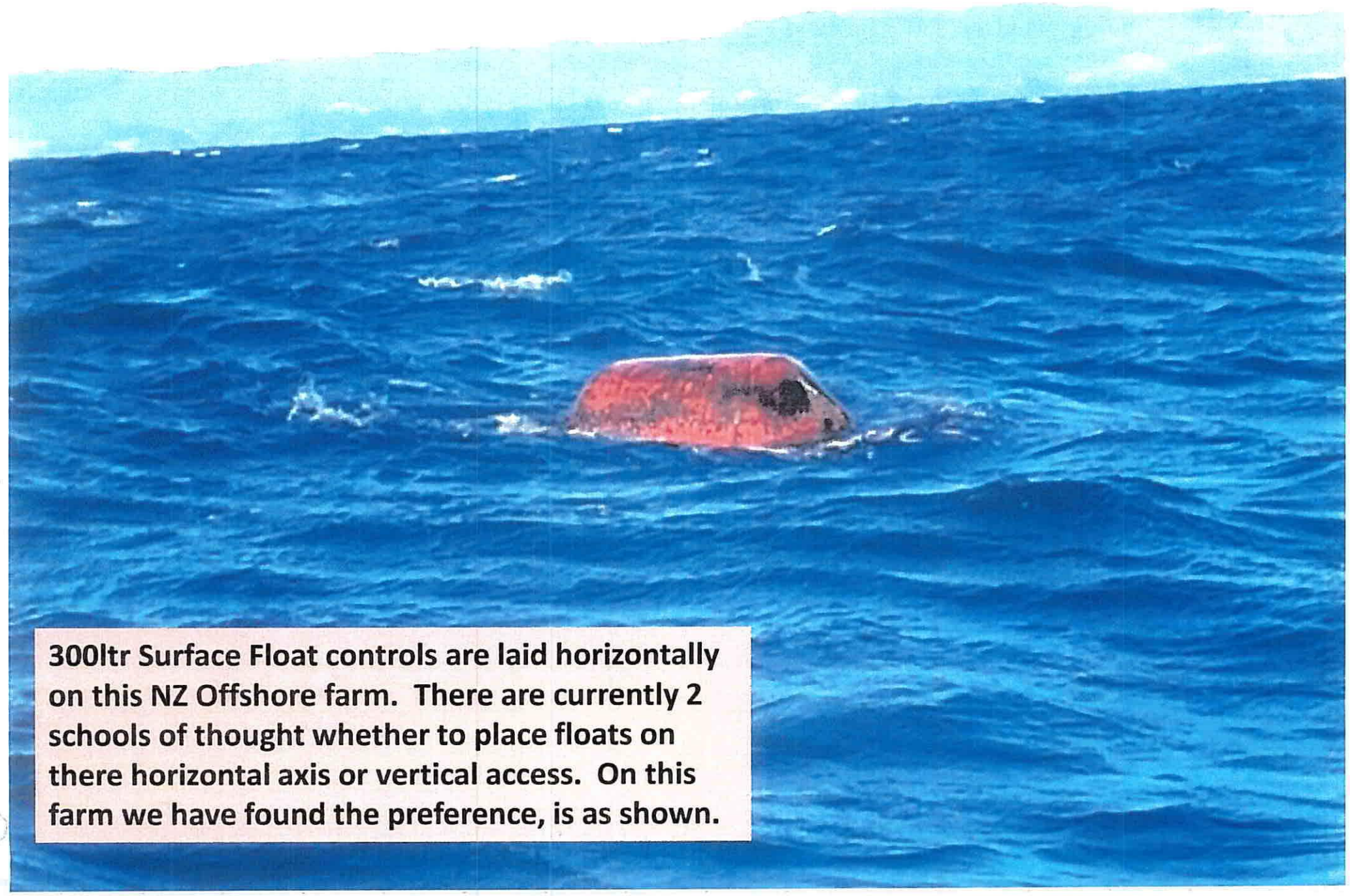
Quality Equipment NZ as a manufacturer has been involved over the life time of the NZ Mussel Industry and specially constructs a range of Anchor Ropes and Mainline Ropes for offshore farms. Hard-lay, high tenacity, and with anti knuckling properties. QE Durashield is used in all these application. On this farm 40mm dia.

To help with open water deployment, Ropes are bulk bagged, rather than coiled. Special markers are added to assist with correct float placements, offered as necessary.





Setting Mainline Offshore. Normally a 2 boat program and building tension into the Long lines from the beginning is critical. Minimum Floatation to start with. Lines are orientated on this farm towards the North, the direction of the worst weather and largest Swells. (Active, Volcanic, White Island in the background)

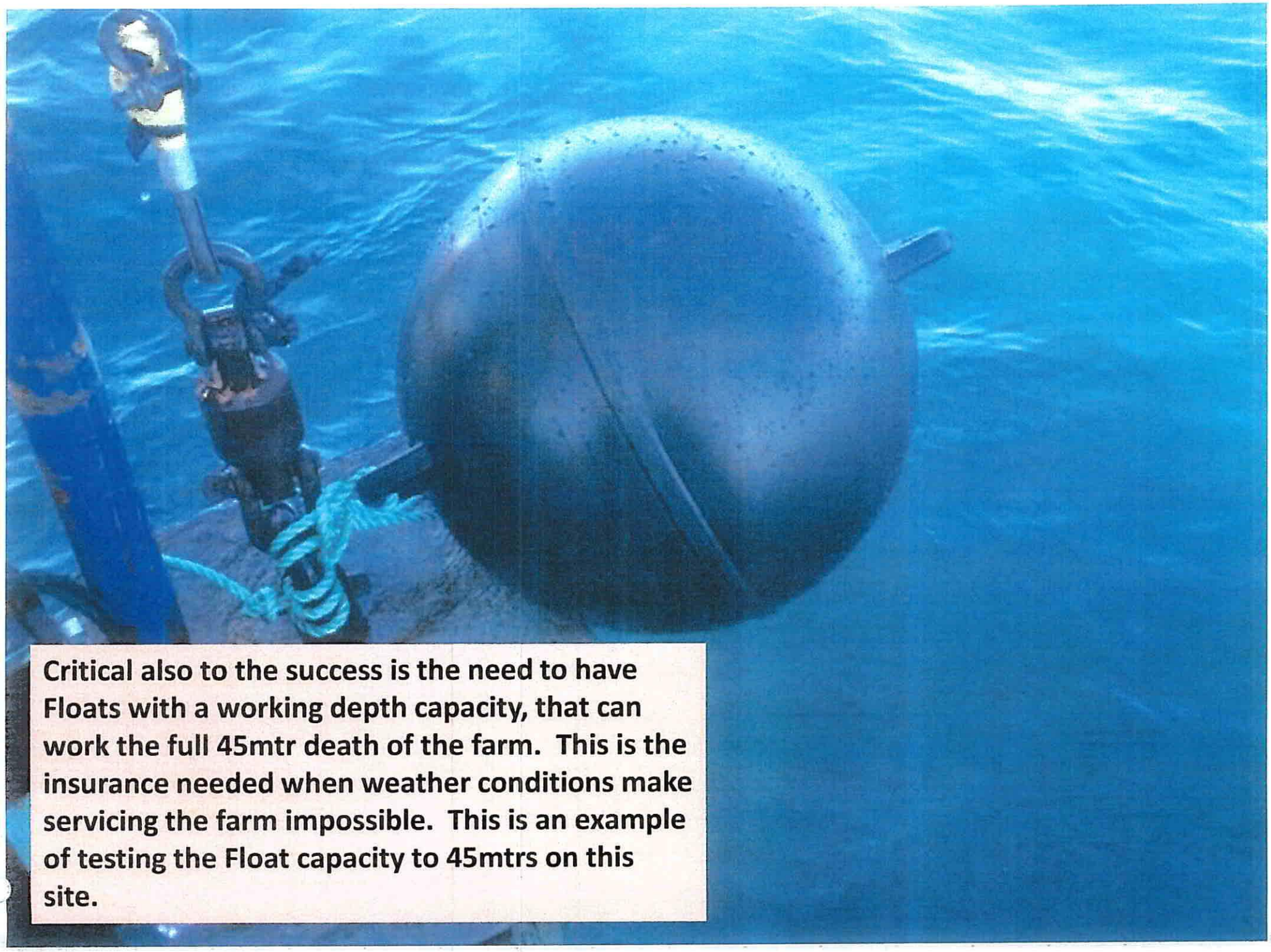


300ltr Surface Float controls are laid horizontally on this NZ Offshore farm. There are currently 2 schools of thought whether to place floats on there horizontal axis or vertical access. On this farm we have found the preference, is as shown.


Soft Tied Eye Knots preferred for float termination. Floats strops are cut at 6mtrs allowing after knots, a farm set approximately 5mtrs sub surface.

After Surface floatation has been added, additional Subsea Floatation to reduce the farms exposure to extreme wave conditions is added. At the end of the cycle about 50% is Sub Sea.

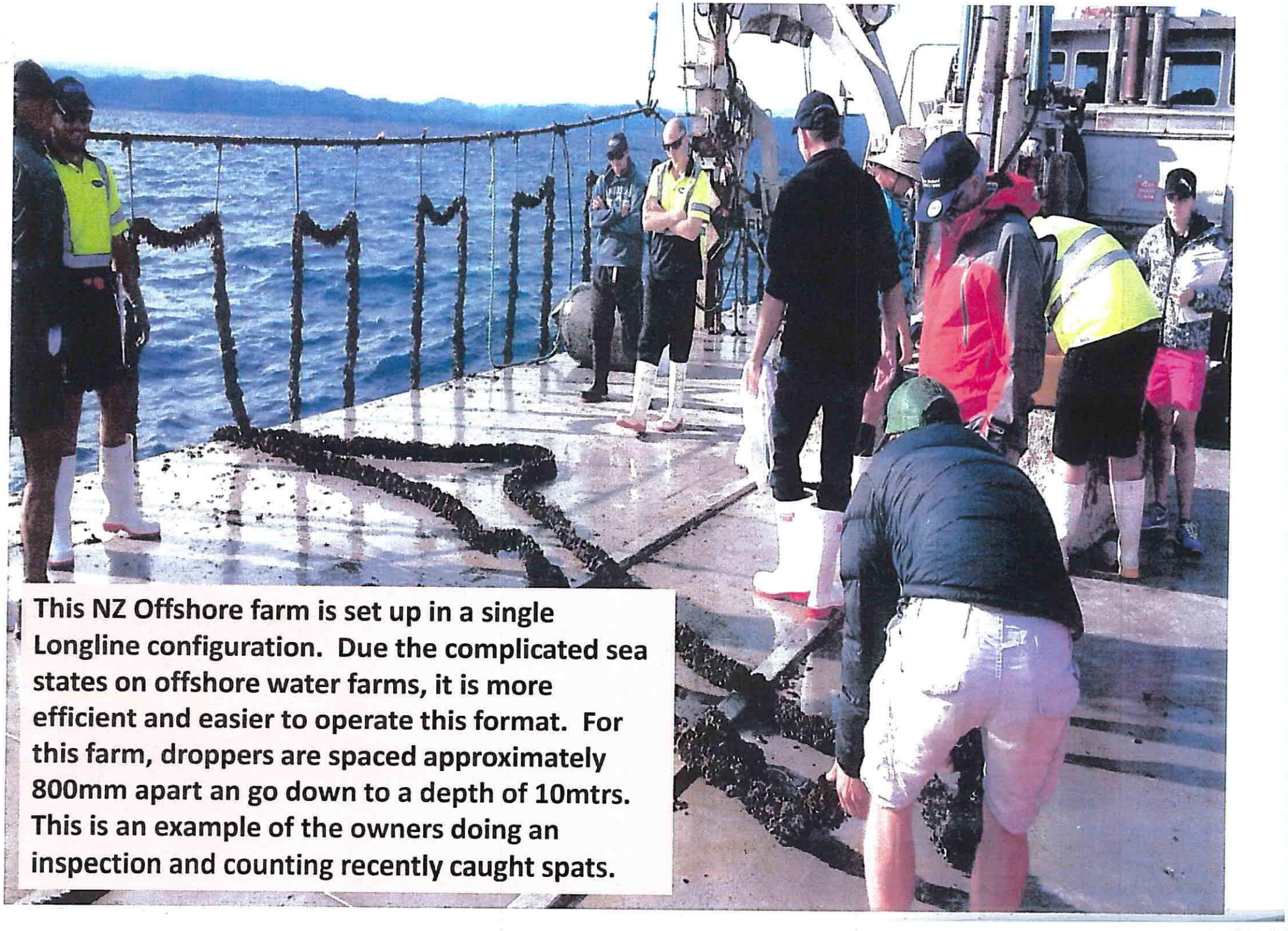
Currently this 550mm, 80L float has proved to be the most successful for this application. The only draw back is the need to handle many small floats on a commercial scale. There is continuing development to resolve this. Set,-5 mtrs.



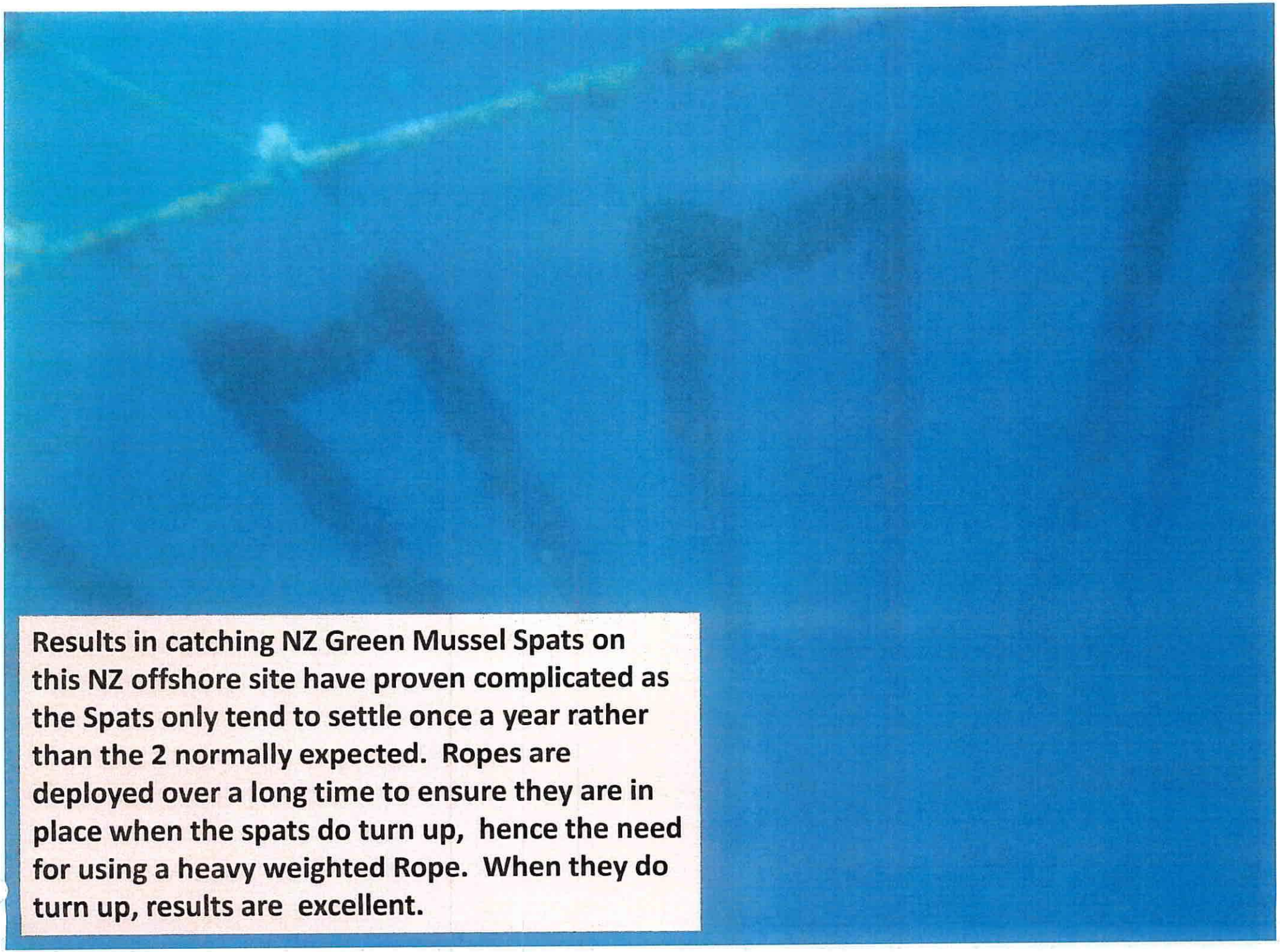
Critical also to the success is the need to have Floats with a working depth capacity, that can work the full 45mtr death of the farm. This is the insurance needed when weather conditions make servicing the farm impossible. This is an example of testing the Float capacity to 45mtrs on this site.

Special Offshore weighted Catching and Growing Ropes are made for each farm location. Dependent on the type of Mussels to be caught and the conditions.

For this NZ Offshore farm, we developed a combination of Loop and Cut Loop with weighted wires. The reason for the combination is the fact the Green Mussel Spats are difficult to catch and have a preference for Cut Loop Ropes, but the Loops added anchoring and holding support in the serve weather conditions.



This NZ Offshore farm is set up in a single Longline configuration. Due the complicated sea states on offshore water farms, it is more efficient and easier to operate this format. For this farm, droppers are spaced approximately 800mm apart an go down to a depth of 10mtrs. This is an example of the owners doing an inspection and counting recently caught spats.



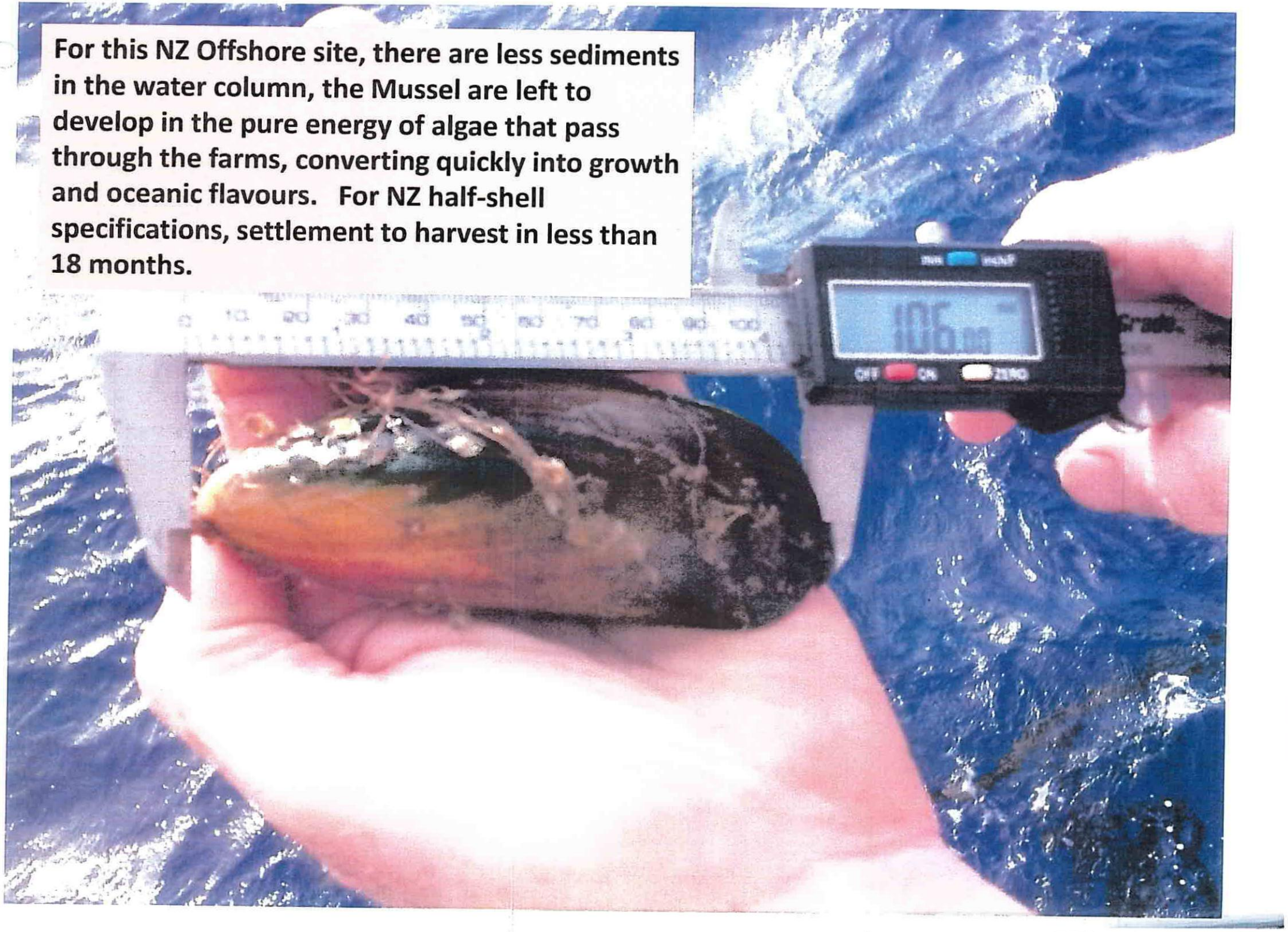
Results in catching NZ Green Mussel Spats on this NZ offshore site have proven complicated as the Spats only tend to settle once a year rather than the 2 normally expected. Ropes are deployed over a long time to ensure they are in place when the spats do turn up, hence the need for using a heavy weighted Rope. When they do turn up, results are excellent.


NZ Offshore, time to harvest Spats, either for resale and reseeding on other inshore sites, or reseeded on this Open Ocean site. Spats are taken from 30mm at the start of the harvest season, but can be as big as 70mm towards the end of the reseeding season.

NZ Offshore, Spats at harvest time entering the Declumper stripping block before being cleaned and separated in the main chamber.

The NZ Offshore Spat harvest is yielding approximately 10,000kg's per hour of clean and separated product is harvested.

NZ Offshore, has provided New Zealand a new source for both Spats and Adult size product, free from many traditional inshore framing fouling wastes. The opportunity now exists to take Spats and reseed at levels as small as 1 over 10 lines (1 line of Spat seed producing 10 longlines of reseeded lower density product.) into as large as 1 over 3 lines, and offers a truly significant market opportunity.


For this NZ Offshore site, there are less sediments in the water column, the Mussel are left to develop in the pure energy of algae that pass through the farms, converting quickly into growth and oceanic flavours. For NZ half-shell specifications, settlement to harvest in less than 18 months.